

Can Dogs Detect Carcinomas in Other Canines?

They can in humans, so why not other dogs? In this study of pet dogs trained to discriminate changes in the odor of healthy control and malignant tumor samples, they were accurate up to 98% of the time. Could this discovery be a lifesaver for your pet?

Analysis by Dr. Karen Shaw Becker

STORY AT-A-GLANCE

- Dogs can detect canine cancer as well as human cancer, offering hope for a condition that affects 1 in 4 dogs over their lifespan, and 1 in 2 dogs over age 10
- Dogs accurately identified samples from dogs with cancer versus healthy dogs with a mean sensitivity of 90% and mean specificity of 98%
- Cancer appears to have a unique "odor signature" that can be detected in urine, sweat, breath and blood
- The odor is due to volatile organic compounds, which dogs can pick up due to their nose's extreme sensitivity to scents
- It's estimated that dogs can detect scents with a concentration as low as 1 to 2 parts per trillion, offering a novel, noninvasive way to detect cancer in earlier stages

Dogs' noses are remarkable, matched only by their extraordinary sense of smell, which is 10,000 to 100,000 times more sensitive than humans. In addition to sniffing out cancer in humans, it turns out dogs can detect canine cancer as well, offering hope for a condition that affects 1 in 4 dogs over their lifespan, and 1 in 2 dogs over age 10.¹

The earlier cancer is detected, the easier treatment tends to be. The need for aggressive treatment, and the likelihood of the cancer spreading, is reduced, and survival time typically increases. Even though cancer is the No. 1 cause of death in adult dogs, cancer screening programs for canines don't exist, outside of your pet's annual wellness visits.

Letting dogs sniff out cancer in their fellow canines would provide a noninvasive way to screen for cancer and improve lifespan in those affected. The first step is finding out if dogs can detect cancer in other dogs the way they can in humans — and this appears to be the case.

"Current diagnostic testing available for canine neoplasia does not routinely allow for identification of cancer until more advanced stage disease," researchers explained. "Studies have shown that MSD [medical scent detection] dogs can detect differences in blood, urine, and breath samples from human cancer patients. Thus, there is reason to believe dogs could do the same with samples from canines diagnosed with cancer."²

Dogs Detect Cancer in Other Dogs' Saliva

The study, published in Journal of the American Veterinary Medical Association (JAVMA),³ involved six pet dogs that were trained to discriminate between the odors of saliva from healthy dogs and saliva from dogs diagnosed with cancer. The training involved a reward-based positive reinforcement method, which occurred one to three times a week over a six-month period.

The dogs succeeded in sniffing out cancer, accurately identifying samples from dogs with cancer versus healthy dogs with a mean sensitivity of 90% and mean specificity of 98%.⁴

"Early and non-invasive detection of cancer is a goal for veterinary oncology, and veterinary medicine in general," said study author Dr. MacKenzie Pellin, DVM, assistant clinical professor of medical oncology at the University of Wisconsin School of Veterinary Medicine in a news release. "While there is still much more research and exploration that needs to be done, our study provides a first step into a novel area of cancer detection for our companion animals."⁵

Dogs Also Sniff Out Cancer in Humans

Cancer appears to have a unique "odor signature" that can be detected in urine, sweat, breath and blood. The odor is due to volatile organic compounds (VOCs), which dogs can pick up due to their nose's extreme sensitivity to scents. It's estimated that dogs can detect scents with a concentration as low as 1 to 2 parts per trillion.⁶

It's no wonder, then, that research suggests they may detect cancer in humans as well as standard diagnostic procedures. In the case of colorectal cancer, a 2011 study found that a specific cancer scent exists in both breath and fecal samples, and dogs were able to detect the scent with an accuracy level comparable to colonoscopy. The dogs were able to accurately detect cancer even in cases of early-stage disease.⁷

Another study found dogs detected ovarian cancer via blood samples not only at the time of first diagnosis but also three and six months later at the time of recurrences.⁸ Further, dogs specially trained to sniff out cancer from breath samples can then detect cancer with more than 60% accuracy.⁹

In another example, beagles were able to identify lung cancer by sniffing blood samples with about 97% accuracy.¹⁰ According to the JAVMA study:¹¹

"Empirical evidence suggests that dogs can detect human cancer in the early stages of development ... Further evidence of the utility of canine scent detection exists with police and civilian services that have utilized trained dogs to detect explosives, drugs, missing persons and endangered wildlife with the help of their olfactory system."

When to Screen Your Dog for Cancer

There may come a time when dogs can reliably detect cancer early on with a quick sniff. But for now, it will be up to you and your vet to watch out for signs of cancer in your pet and conduct appropriate screenings. Your veterinarian should check for any unusual lumps or growths and conduct certain blood and urine tests.

For instance, a urine test known as the CADET (CAnCER DETection) BRAF Mutation Detection Assay can detect bladder cancer with as few as 10 cancer cells in the urine, making it useful for early detection before symptoms appear.¹² Heska NuQ Veterinary Cancer Screening Test (which measures early cancer blood markers called nucleosomes) and VDI labs' Cancer Risk Assessment blood test are both available at your local veterinary clinic.

Because risk of cancer varies by dogs' breed and age, researchers conducted a study to determine when the best time is to **start noninvasive cancer screenings** such as these.¹³ They suggested that annual cancer screening should start two years before the median age of cancer diagnosis for dogs of similar breed and weight.

Using this as a baseline, they recommended starting cancer screening for all dogs at 7 years, but starting at age 4 for dog breeds that tend to be diagnosed at an earlier age, such as bulldogs, boxers, Vizslas, French bulldogs and Boston terriers.¹⁴

Of course, it's never too soon to take steps to reduce your dog's cancer risk, like helping them maintain a healthy weight, avoid an inflammatory, kibble-based diet, and reduce exposure to toxins, including pesticides such as flea and tick preventives, lawn and home cleaning and scenting chemicals, flame retardant-treated fabrics, unnecessary vaccinations and airborne pollutants, including secondhand tobacco smoke.

Be sure to feed a minimally processed, anti-inflammatory diet and wait to spay or neuter your pet until the age of 18 months to 2 years, especially for **large or giant breeds**. Better yet, **sterilize your pet without desexing**. As an aside, be sure to give your dog's powerful sniffer some respect — in the form of regularly allowing your pup to **"exercise" his olfactory abilities** on walks and other outings.

Sources and References

^{1,2,3,4,6,11} [JAVMA March 23, 2023](#)

⁵ [PR Newswire April 17, 2023](#)

⁷ [Gut. 2011 Jun;60\(6\):814-9](#)

⁸ [BMC Cancer. 2013 Aug 26;13:396](#)

⁹ [KVUE November 13, 2017](#)

¹⁰ [Experimental Biology 2019, Accuracy of Canine Scent Detection of Lung Cancer in Blood Serum](#)

¹² [AKC October 14, 2016](#)

¹³ [PLoS ONE 18\(2\): e0280795](#)

¹⁴ [Phys.org February 1, 2023](#)
